



## IMPACT OF SIMULATED *IN VITRO* DIGESTION ON THE ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES OF SELECTED EDIBLE FLOWERS

Janarny G.<sup>1\*</sup>, Gunathilake K.D.P.P.<sup>2</sup> and Ranaweera K.K.D.S.<sup>1</sup>

<sup>1</sup>Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura

<sup>2</sup>Department of Food Science & Technology, Faculty of Livestock, Fisheries & Nutrition, Wayamba University of Sri Lanka  
gjanarny3@gmail.com

### Abstract

Edible flowers have been identified as novel sources of polyphenols, which are capable of combatting oxidative stress and exerting bioactivities. However, the bioactivities of these flowers within the human body, depends upon the amount of polyphenols absorbed through the digestive system. Thus the present study assessed the effect of *in vitro* gastro-intestinal digestion on the contents of phenolics along with the antioxidant and anti-inflammatory properties of six edible flowers. Antioxidant activity was measured using nitric oxide and hydrogen peroxide scavenging activities. Anti-inflammatory properties were measured using inhibition of egg albumin denaturation and heat- induced hemolysis. Based on the outcomes, among the methanolic extracts the highest total phenolic content was noted in *Cassia auriculata* (230.60  $\mu\text{mol}$  gallic acid equivalents/g of dry weight). Total phenolic content of all the flowers have decreased after the gastric phase and total flavonoid content has increased. The total anthocyanin content of three species of flowers has decreased after the intestinal phase of digestion. The highest recovery of anthocyanins after the intestinal phase was noted in *Cassia auriculata* (374.66 $\pm$ 0.03 nmol/g dry weight). Hydrogen peroxide scavenging activity of *Bauhinia racemose* and *Tamarindus indicus* has increased in the gastric phase by 20.50% and 0.52% respectively. *Bauhinia racemose* was able to inhibit 4.43 $\pm$ 01.5% of heat-induced hemolysis of red blood cells after dialysis. Though a reduction in the phenolic contents after gastro-intestinal digestion was noted, sufficient quantity of phenolic compounds were available to be absorbed with the dialysis to exert antioxidant and anti-inflammatory activities.

**Keywords:** Antioxidant, edible flowers, polyphenols, *in vitro* digestion